

What is claimed is:

1. A device for measuring data for calibration for obtaining data for calibration of a camera capable of varying optical conditions, using a plurality of images of a calibration chart having marks arranged thereon which were photographed with said camera under varied optical conditions, comprising:

a mark extracting part for extracting said marks from said images of said chart;

an internal parameter calculating part for calculating data for calibration under optical conditions under which said images of said chart were photographed based on the positions of said marks extracted by said mark extracting part and a plurality of conditions under which said images of said chart were photographed; and

an internal parameter function calculating part for calculating data for calibration corresponding to said varied optical photographing conditions of said camera, using said data for calibration calculated in said internal parameter calculating part and a plurality of optical conditions under which said images of said chart were photographed.

2. The device for measuring data for calibration as claimed in claim 1,

wherein said calibration chart is flat, and

wherein said plurality of images of said chart are stereo images photographed in such a manner that said data for calibration can be calculated therefrom by said mark extracting part and said internal parameter calculating part.

3. The device for measuring data for calibration as claimed in claims 2,

wherein said data for calibration calculated in said internal parameter function calculating part can be continuously calculated according to said varied optical photographing conditions of said camera.

4. The device for measuring data for calibration as claimed in claims 2,

wherein said optical conditions include at least one of the focal length of a photographing lens of said camera and the position of said lens which is moved to adjust the focus.

5. The device for measuring data for calibration as claimed in claims 2,

wherein said data for calibration include at least either of data of the principle position of a lens and the distortion aberration of said lens.

6. The device for measuring data for calibration as claimed in claim 1,

wherein said calibration is three-dimensional, and
wherein said plurality of images of said chart are stereo images photographed in such a manner that said data for calibration can be calculated therefrom by said mark extracting part and said internal parameter calculating part.

7. The device for measuring data for calibration as claimed in claims 6,

wherein said data for calibration calculated in said internal parameter function calculating part can be

continuously calculated according to said varied optical photographing conditions of said camera.

8. The device for measuring data for calibration as claimed in claims 6,

wherein said optical conditions include at least one of the focal length of a photographing lens of said camera and the position of said lens which is moved to adjust the focus.

9. The device for measuring data for calibration as claimed in claims 6,

wherein said data for calibration include at least either of data of the principle position of a lens and the distortion aberration of said lens.

10. The device for measuring data for calibration as claimed in claims 1,

wherein said data for calibration calculated in said internal parameter function calculating part can be continuously calculated according to said varied optical photographing conditions of said camera.

11. The device for measuring data for calibration as claimed in claims 1,

wherein said optical conditions include at least one of the focal length of a photographing lens of said camera and the position of said lens which is moved to adjust the focus.

12. The device for measuring data for calibration as claimed in claims 1,

wherein said data for calibration include at least

either of data of the principle position of a lens and the distortion aberration of said lens.

13. A method for measuring data for calibration, comprising:

- a step of photographing a plurality of images of a calibration chart having marks arranged thereon, with a camera capable of varying its optical conditions under varied optical conditions;

- a mark extracting step for extracting said marks from said images of said chart;

- an internal parameter calculating step for calculating data for calibration under which said images of said chart were photographed based on the positions of said extracted marks; and

- an internal parameter function calculating step for calculating data for calibration corresponding to said varied optical photographing conditions of said camera, using said calculated data for calibration and a plurality of optical conditions under which said images of said chart were photographed.

14. A program for measuring data for calibration used to obtain data for calibration of a camera capable of varying optical conditions, using a plurality of images of a calibration chart having marks arranged thereon which were photographed with said camera under varied optical conditions,

- said program being for making a computer function as;
- mark extracting means for extracting said marks from said images of said chart;

- internal parameter calculating means for calculating data for calibration under optical conditions under which

said images of said chart were photographed based on the positions of said marks extracted by said mark extracting means; and

internal parameter function calculating means for calculating data for calibration corresponding to said varied optical photographing conditions of said camera, using said data for calibration calculated in said internal parameter calculating means and a plurality of optical conditions under which said images of said chart were photographed.

15. A computer readable recording medium in which a program for measuring data for calibration is stored,

said program being for measuring data for calibration used to obtain data for calibration of a camera capable of varying its optical conditions, said data for calibration being obtained, using a plurality of images of a calibration chart having marks arranged thereon which were photographed with said camera under varied optical conditions,

said program being for making a computer function as; mark extracting means for extracting said marks from said images of said chart;

internal parameter calculating means for calculating data for calibration under optical conditions under which said images of said chart were photographed based on the positions of said marks extracted by said mark extracting means; and

internal parameter function calculating means for calculating data for calibration corresponding to said varied optical photographing conditions of said camera, using said data for calibration calculated in said internal parameter calculating means and a plurality of optical

conditions under which said images of said chart were photographed.

16. An image data processing device, comprising:

an image data receiving part for receiving data of photographed images and optical photographing conditions from a camera capable of varying its optical conditions;

a calibration data forming part for forming data for calibration based on said optical photographing conditions received by said image data receiving part; and

an image processing part for processing said data of photographed images based on said data for calibration.

17. The device for measuring data for calibration as claimed in claims 16,

wherein said optical conditions include at least one of the focal length of a photographing lens of said camera and the position of said lens which is moved to adjust the focus.

18. The device for measuring data for calibration as claimed in claims 16,

wherein said data for calibration include at least either of data of the principle position of a lens and the distortion aberration of said lens.

19. An image data processing device, comprising:

an image data receiving part for receiving data of photographed images from a camera capable of varying its optical conditions;

a calculating part for obtaining optical photographing conditions from the data of photographed images;

a calibration data forming part for forming data for calibration based on said optical photographing conditions obtained by calculating part; and

an image processing part for processing said data of photographed images based on said data for calibration.

20. The device for measuring data for calibration as claimed in claims 19,

wherein said optical conditions include at least one of the focal length of a photographing lens of said camera and the position of said lens which is moved to adjust the focus.

21. The device for measuring data for calibration as claimed in claims 19,

wherein said data for calibration include at least either of data of the principle position of a lens and the distortion aberration of said lens.